SOIL SURVEY OF OKLAHOMA COUNTY, OKLAHOMA.

By W. E. McLENDON and GROVE B. JONES.

DESCRIPTION OF AREA.

Oklahoma County is in the shape of a rectangle 24 miles wide by 30 miles long. It is situated in the south-central part of the Territory of Oklahoma, between 35° 20′ and 35° 45′ north latitude, and 77° 5′ and 77° 35′ west longitude. It is bounded on the north by Logan County, on the east by Lincoln and Pottawatomie counties, on the south by Cleveland County, and on the west by Canadian County.

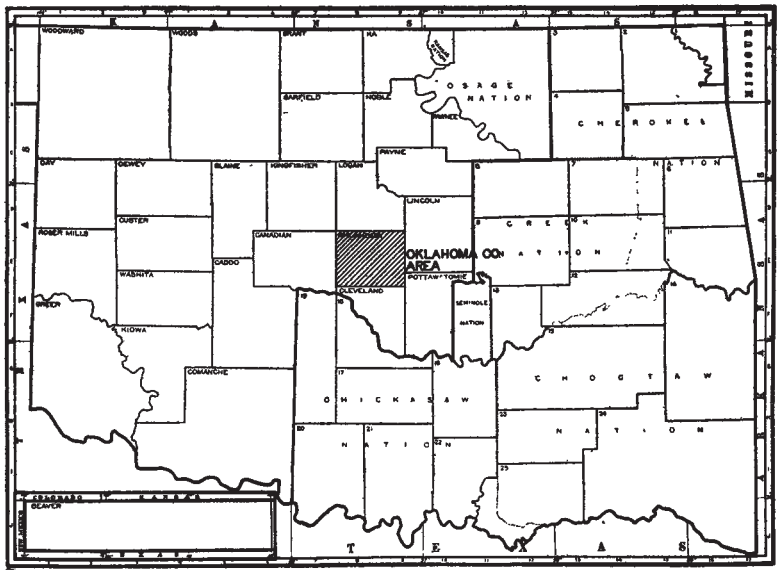

FIG. 19.—Sketch map showing location of the Oklahoma County area, Oklahoma.

The county comprises portions of two of the principal agricultural belts of Oklahoma, each having quite distinct topographic features. In the prairie section, which is confined very largely to the western two-fifths of the county, the surface in general ranges from level to gently rolling, broken by stream depressions and valleys from 10 to 100 feet deep. Bordering this on the east and extending beyond the eastern boundary of the county is the sandy section, which is decidedly more rolling and hilly, and is badly cut by an extensive system of small streams, most of which are intermittent. The general elevation

of the prairie is from 1,200 to 1,250 feet above sea level, reaching a maximum of 1,300 feet in the sandy areas of Council Grove Township. Passing into the sandy section, there is a gradual slope to the east until, along the eastern boundary of the area, the highest ridges are slightly less than 1,100 feet above sea level.

Oklahoma County has a complex system of drainage. The North Canadian River crosses it in a general easterly direction, passing through the city of Oklahoma, and then making a large bend to the north. It is the largest stream in the county, but as it has only a shallow valley and occupies the crest of a general drainage divide, it drains only a narrow strip. The northern half of the county to the east of the Santa Fe Railroad drains eastward through Deep Fork. This stream is 10 to 160 feet lower than the North Canadian, although paralleling it, and only 3 to 5 miles distant a part of the way. The southeastern corner is drained to the south and east by tributaries of Little River, and the extreme southwestern corner by the Canadian River. The northwestern corner drains to the north through tributaries of Chisholm Creek, which empties into the Cimarron River.

Upon the opening of Oklahoma Territory to settlement, in 1889, there was a great rush of homeseekers and investors from all parts of the country, resulting in a sudden settlement of all farming lands and the rapid growth of towns and cities. Of the original homesteaders a great many have risen from poverty to a state of independence. Their first homes, which were usually small and rudely constructed, have been replaced by modern residences. Since the opening quite a number of wealthy farmers have been attracted to the area. They build good homes and have all the necessary improved machinery to carry on farming operations. At the present time practically all of the desirable lands are fairly well settled with white people, while the sandy sections are more sparsely settled with a mixed population of whites and negroes.

Oklahoma, with a population of about 35,000, is the chief city of the area. Edmond is the next largest town. Among the smaller towns may be mentioned Luther, Harrah, Choctaw, Britton, Jones, Spencer, Wheatland, Witcher, Arcadia, and Newalla, all shipping and supply points for the territory surrounding them.

The county is provided with an extensive system of public roads. There is a road on nearly every section line, even through the very sandy and thinly settled region. Those through the prairie are in good condition the year around, except during rainy weather. Some of those through the sandy section are too sandy and hilly to be used for heavy hauling. Nearly all stream crossings are bridged.

No section of the county is more than 9 miles from a railroad station. The railroads centering in Oklahoma are through lines of the Atchison,

Topeka and Santa Fe, Chicago, Rock Island and Pacific, St. Louis and San Francisco, and the Missouri, Kansas and Texas. These came into the area in the order named, the last one having been built but three or four years.

The city of Oklahoma is the central market for all farm products. Some of the wheat crop is consumed by mills in Edmond and Oklahoma and some of the cattle by an independent packing plant in the latter place. All of the cotton crop goes to outside markets. A large proportion of it, however, is brought to Oklahoma to be compressed before being shipped.

CLIMATE.

The climate of the area is healthful and pleasant and is favorable to the growth of a great variety of crops. The summers are long and hot, but on the hottest days there is breeze enough to render them endurable. The spring months are accompanied by high winds and erratic cold snaps, which have an important bearing on the fruit industry. The winters are dry and usually not very cold. The most unpleasant feature about the winters is the periodic occurrence of very cold waves, or "northers," as they are called, which come without any forewarning. On a pleasant day the wind will shift from the southwest to the north and begin to blow a gale. The temperature within a few hours will drop below freezing, and occasionally below zero. These cold snaps are generally accompanied by cloudy weather and sometimes by a light snow or sleet. January and February are the coldest and July and August the warmest months of the year.

The following tables were compiled from the records of the Weather Bureau stations at Oklahoma and Guthrie:

Normal monthly and annual temperature and precipitation.

Month.	Oklahoma.		Guthrie.		Month.	Oklahoma.		Guthrie.	
	Temperature.	Precipitation.	Temperature.	Precipitation.		Temperature.	Precipitation.	Temperature.	Precipitation.
	°F.	*Inches.*	°F.	*Inches.*		°F.	*Inches.*	°F.	*Inches.*
January	37.0	1.47	37 7	0.99	August	79.0	2.71	81.2	2.90
February	40.5	.94	36.8	.92	September	73.8	2.63	73.3	3.23
March	48 1	2.08	50.2	2 20	October	62.0	2.07	63.6	2.24
April	55.0	2.66	62.4	2.40	November	47.9	2.50	50.3	2.21
May	67.8	5.48	69.9	5.79	December	40.1	2.05	38.8	1.34
June	75.8	2.78	77.2	3.46	Year	58.8	31.08	60.3	30.78
July	79 0	3.71	81.8	3.10					

Dates of first and last killing frosts.

Year.	Oklahoma.		Guthrie.	
	Last in spring.	First in fall.	Last in spring.	First in fall.
1898	Apr. 6	Oct. 20	.....	Oct. 20
1899	Apr. 7	Nov. 3	Apr. 7	Nov. 1
1900	Mar. 31	Nov. 12	.....	.....
1901	Apr. 18	Nov. 4	.....	.....
1902	Mar. 30	Nov. 17	Mar. 31	Nov. 26
1903	Apr. 30	Nov. 16	Mar. 28	Nov. 17
1904	Mar. 27	Oct. 27	Mar. 27	Oct. 26
Average	Apr. 8	Nov. 5	Mar. 31	Nov. 6

It will be seen that the annual rainfall is only about 31 inches, but that it occurs mostly during the growing season, making it possible to grow as good crops here as in some of the more humid sections. Occasionally prolonged droughts damage the crops. Loss from this source could be avoided or reduced if the farmers would give more attention to the conservation of moisture in the soil by deeper plowing and more thorough cultivation.

The average date of the last killing frost in the spring is April 8, and of the first in the fall November 5.

AGRICULTURE.

Since the settlement of the area in 1889 the agricultural practices have not undergone any great changes. From the beginning there has been quite a diversity of methods in use, a condition to be expected from the fact that the settlers came from all parts of the country. Those from the South brought with them their methods of shallow, one-horse tillage and cultivation, while those from the North, accustomed to the use of improved farm machinery, practiced entirely different methods. With few exceptions, the settlers had very limited means and were obliged to resort to crude practices. Their attention was first turned to such crops as would give prompt returns with the least expenditure of labor and money. For this reason very little attention was given to diversified farming. Corn, wheat, oats, and hay from the native prairie grass were the principal products. Cotton was confined very largely to the sandier sections. Stock raising soon developed into an important industry, especially among the grain farmers. In the vicinity of Oklahoma a number of settlers gained a livelihood by growing vegetables. This industry gradually died out, and now practically all the early vegetables consumed in the city come from points outside the county.

At the present time the farmers in the prairie section are devoting most of their attention to growing wheat, corn, oats, Kafir corn,

prairie grasses, and some minor crops. Stock raising is an important industry on many of the farms. Throughout the sandy belt a different order of things prevails. The areas under cultivation are devoted very largely to cotton, which is the chief money crop. Considerable corn is grown, but is consumed mostly by the farm stock. On some of the sandy types peach growing is becoming an important industry.

The greater part of the wheat crop is sown in the fall. Oats, being easily winterkilled, are planted in early spring, generally by March 10. The land is generally broken with a two to four horse plow and afterwards gone over with a smoothing harrow to crush the clods and level the surface. Nearly all of the sowing is done with drills.

The methods of planting corn and cotton are quite variable, and no special methods are followed on any individual soil type. The corn rows are about 3½ feet apart, and the distance between the hills is from 14 to 18 inches. Some plant the corn in furrows, while others plant it on level ground. The furrow method, where the soil is well drained, gives good results and affords a means of keeping down grass and weeds between the corn hills without the use of the hoe. The furrow planting is generally done with listers.

Most of the cotton is planted on ridges or "beds," as in the older cotton States. Some farmers recognize the advantage of level planting, so that improved machinery may be employed as a means of economizing labor.

In all lines of farming the tendency is more and more toward the use of improved machinery. There is a wasteful lack of attention, however, in caring for the machinery when not in use.

According to the 1900 census reports there were 60,048 acres in wheat, producing 908,490 bushels; 54,111 acres of corn, producing 1,475,350 bushels; 16,888 acres in cotton, producing 4,716 bales of 500 pounds each; 14,223 acres of oats, producing 497,720 bushels; 14,782 acres in wild prairie grasses, producing 11,906 tons of hay; 4,690 acres sown for forage, producing 9,368 tons; and 4,122 acres of Kafir corn, producing 89,597 bushels. There are many other crops of less importance, chief among which may be mentioned alfalfa, sorghum, broom corn, Irish potatoes, sweet potatoes, millet, and Hungarian grasses, peanuts, and castor beans. According to the same authority the returns from orchard products were $35,998, miscellaneous vegetables $43,296, and the total live stock was valued at $1,224,599.

In the line of stock raising, beef cattle receive chief attention. The tendency is toward the raising of the better breeds. The few dairy farms are stocked mostly with Jerseys. Some attention is given to hog raising. Cattle and horses are allowed to graze the wheat fields during the winter months.

Only the broader soil adaptations are recognized, except for a few special crops. The cotton crop is confined very largely to the soils of the sandy belt. Wheat and oats are not grown to any extent outside of the prairie belt and the river bottoms. The Vernon sandy loam and the Vernon fine sandy loam have been found to give the most satisfactory results with peaches. Only the loamy alluvial and heavy upland soils have been tried for alfalfa.

Little attention has been given to a systematic rotation of crops with a view to keeping the soil in a highly productive state. As a result, some of the sandier soils have so depreciated in productiveness that some of the farmers believe commercial fertilizers will soon be necessary, though at the time of the survey they were not used to any extent. Stable manure, as a rule, is not used to the best advantage, and some farmers do not even haul it onto the land.

One reason why there has not been a greater diversity of crops is the scarcity of labor. Except during the grain harvesting season nearly all of the work is done by the farmer and his family. For lack of labor much of the cotton crop remains ungathered until late in the winter. Laborers are generally paid $1 a day. Regular help costs from $10 to $16 a month, with board. In Oklahoma, and to a less extent in the smaller towns, there is a floating population that seeks temporary employment on the farms. As a rule, this element does not make satisfactory help. Most of the colored people own or rent farms.

As originally taken up under the homestead law, the farms consisted of 160 acres each. Since then, however, a number of farms have been bought and combined, while others have been subdivided. According to the census of 1900, the average size of the farms in Oklahoma County was 169.6 acres. Of the total farms, 58.8 per cent are operated by the owners and the remainder are farmed by tenants.

Farms are rented in a number of ways. If the landowner furnishes everything but the labor, he receives half of the crop. When the tenant furnishes the seed, tools, work animals, etc., a farm with a suitable dwelling on it usually rents for a third of the crop, to be divided at the barn. Cash rents range from $1 to $3 an acre, depending upon the quality of the land.

The prices of land in the county are quite reasonable. The sandy lands can be bought for $20 an acre or less. In the prairie section land sells for from $10 to $80 an acre.

The greatest opportunities in the area are in the line of cattle and hog raising. Dairying is another important industry that should be developed more extensively.

The yields of all of the crops could be greatly increased by more attention to deep and thorough tillage, together with a systematic rotation of crops.

SOILS.

There are two general groups of soils in the area, one comprising all of the uplands and the other the stream bottoms. The soils of the uplands, by far the most extensive, are residual in origin, some of them being derived from the Enid formation of Permian and some from the Chandler formation of Pennsylvanian.[a] By some both of these formations are collectively spoken of as the Permian red beds. The soils of these two formations are closely associated and have been grouped in the Vernon series. The Enid formation is confined to the prairie belt. In noneroded areas it consists of a dark silt and clay 4 to 5 feet deep, underlain by a red clay interstratified with layers of red shale and shaly sandstone. This extends to a depth of 10 to 30 or more feet where the Pennsylvania sandstones are encountered. Along the eastern boundary of the prairie this formation thins out and finally gives way to the Chandler formation, which, within the limits of the area, is made up very largely of fine-grained sandstone, ranging in color from yellow to red, with the red predominating. In some places the sandstone is interstratified with red clays. Local areas of the same formation are found in the western end of the county. All areas of it were originally forested, principally with post oak and black-jack. The post oak makes its best growth on the loamy and the black-jack on the sandy areas. Upon reaching the typical Enid formation all tree growth disappears.

In the prairie belt the upper dark stratum gives rise to the Vernon silt loam and the red clay to Vernon clay. Where erosion has gone on to such an extent as entirely to remove the clays down to the sandstone, as along the creek northwest of Edmond, we find the Vernon fine sand, the Vernon fine sandy loam, and the Rough stony land. The Chandler formation, where it occurs to the exclusion of the Enid, gives rise only to Rough stony land and the sandier types of the Vernon series.

The alluvial bottom soils are subdivided into two series. Those types of local origin found along streams have brown to reddish-brown soils, underlain by reddish-brown or red subsoils. These are members of the Miller series. The North Canadian River crosses three different formations before reaching the area. The soils in its valley are a mixture of material from all of these formations, thoroughly reworked by stream action. They are much darker than those of the Miller series, and belong in the Wabash series.

---

[a] The names of the different geological formations are the ones used by Charles Newton Gould in his "Geology and Water Resources of Oklahoma."

Fourteen types of soil were recognized and mapped, their names and actual and relative extent being shown in the following table:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Vernon fine sandy loam	162,048	35.2	Miller fine sandy loam	11,136	2.4
Vernon silt loam	131,072	28.4	Vernon sandy loam	9,984	2.2
Vernon fine sand	44,928	9.7	Wabash fine sandy loam	9,792	2.1
Miller loam	19,328	4.2	Vernon clay	9,216	2.0
Rough stony land	18,752	4.0	Wabash silt clay	4,992	1.1
Wabash fine sand	14,528	3.2	Miller clay	1,280	.3
Wabash silt loam	11,968	2.6			
Vernon sand	11,776	2.6	Total	460,800	

VERNON SAND.

The Vernon sand consists of from 4 to 6 inches of incoherent gray or brownish-gray sand, ranging from medium to fine in texture, underlain by a similar textured light-brown or yellowish-brown sand. Occurring, as it does, in hillocks and ridges, the principal variations in the type are in depth and topography rather than in texture or structure. The more elevated areas may be heaps of loose sand to a depth of at least 10 feet, while on the slopes and in the depressions the sand may not be much over 8 feet deep. Slightly loamy areas where the depth to clay is less than 3 feet are mapped as Vernon sandy loam.

The largest area of the type is found near the North Canadian River in the east-central part of the county, mostly in Springer Township. A second area occurs just north of the river in the southwestern part of the county, in Council Grove Township. Smaller areas are found in the southeastern part of the county, around the head of Hog Creek. As may be inferred from the description above, all areas of the type are well drained.

This type is derived from a red sandstone, which in a partially disintegrated state underlies all areas at a depth of 3 to 10 feet or more. The variations in depth have been brought about very largely by wind action.

Only a few small areas of this type are under cultivation, and these are confined to the slopes and depressions where the sand is shallowest. Cotton and corn are the principal crops. The yields are very light. It is difficult to get a stand of any of the seeded crops, as the sand is badly drifted by the winds, especially during the spring months. Peach trees when once started do fairly well. They should be confined to areas where the sand is shallowest. Uncleared areas support a scrubby growth of black-jack oak and are generally fenced and pastured.

Farming on this type of soil should not be attempted. All forested areas should remain so, or else valuable lands will be ruined by sands drifting over them.

The results of a mechanical analysis of representative samples of the soil and subsoil of this type are given in the following table :

Mechanical analyses of Vernon sand.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per ct.	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*
14802	Soil	0.3	2.7	15.5	60.9	14.7	3.8	2.3
14803	Subsoil	.3	3.1	16.5	60.2	14.1	3.6	2.2

VERNON FINE SAND.

The soil of the Vernon fine sand consists of from 4 to 6 inches of a light-gray to brown loose fine sand. This is underlain to a depth of 2 or 3 feet by a yellowish or salmon-colored fine sand, and below this usually occurs a porous sandy clay grading into a partially disintegrated sandstone. Locally the sand covering is more than 3 feet deep, but rarely so deep as in the case of the Vernon sand. The soil contains only a small quantity of humus. In places there is very little difference in the color of the soil and the subsoil.

This type is found in areas of various sizes all through the uplands in the eastern half of the county. The largest areas occur in the southeastern part of the county, in Cass, Pottawatomie, and Choctaw townships. It occupies the crests of ridges and slopes, which in general are less hillocky and broken than those occupied by the Vernon sand. All areas of the type are well drained.

This soil type is derived directly from a red fine-grained sandstone which may be seen outcropping locally on some of the slopes. The sandier areas have been built up by the winds. Some of the slopes that were a sand when brought under cultivation have had the sand blown off until now they are more nearly a fine sandy loam. Others have become more sandy by the combined action of wind and water.

The original forest consists of a scrubby growth of black-jack oaks, which are used in a limited way for fuel and fence-posts. For the latter purpose they last only a year or two.

This soil is regarded as an undesirable type for agricultural purposes, and only limited areas are under cultivation. Cotton and corn are the most important crops. Cotton yields from one-fourth to one-half bale and corn from 5 to 15 bushels per acre. Peach trees have been tried on a limited scale. They do well if properly started and protected. The forested areas are fenced and used for pasturage. This soil should not be left bare during the winter months. Rye would prove a good cover crop.

The average results of mechanical analyses of representative samples of this type are given in the following table:

Mechanical analyses of Vernon fine sand.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per ct.	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*
14804, 14806	Soil	0.0	0.3	5.8	72.9	14.7	4.2	1.7
14805	Subsoil	.0	.3	.8	80.8	15.0	1.6	1.5

VERNON SANDY LOAM.

The soil of the Vernon sandy loam, to a depth of 15 to 20 inches, is a medium textured sandy loam of a dark gray or brown color. Below this is a brownish, slightly mottled or brown sandy clay, which contains enough coarse sand and fine gravel to give it quite a gritty feel. A limited quantity of gravel may also be found in the soil. Older cultivated areas are gradually becoming lighter colored and sandier at the surface on account of the winds, which remove a great deal of the finer material, including the humus. In drifting, the tendency is to reduce the depth of the soil in exposed areas, and to build up sandy areas on the sheltered slopes. The differences in the sandiness of the soil brought about in this way constitute the principal phases of the type. This is an easy soil to cultivate and to keep in good tilth.

The Vernon sandy loam is not an extensive soil type. The largest areas are in Council Grove and Oklahoma townships. Northeast of Spencer, in Crutcho and Springer townships, are several small areas. The surface ranges from level to gently rolling, the type being subject to erosion in a few places. All the areas are naturally well drained.

The large area in Council Grove Township owes its origin principally to sandy material drifted over what originally were Vernon silt loam areas. The areas associated with the Vernon sand were derived directly from a red sandstone. Those areas near Oklahoma, bordering the river lands, were derived from a soft conglomerate sandstone; hence the gravel content in both soil and subsoil. Throughout the type the texture and surface features have been modified to some extent by wind action.

All of this soil is under cultivation, and is devoted to a variety of crops. Of the general farming crops, corn, oats, Kafir corn, cotton, sorghum, wheat, and a few others of less importance are grown. Corn yields from 20 to 30 bushels, oats from 30 to 60 bushels, Kafir corn from 20 to 40 bushels, and cotton from one-half to 1 bale per acre. The occasional droughts cause a great variation in the yields from year to year. The soil is too sandy to give satisfactory yields of wheat, except during very favorable seasons. For peach growing it is recognized as one of the best soils in the area, and some of the farmers are

devoting a large acreage to this crop. It is also a good truck soil, but is not being used to any extent for this purpose.

The average results of mechanical analyses of samples of this soil are given in the following table:

Mechanical analyses of Vernon sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per ct.	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*
14794,14796	Soil	1.3	10.3	12.6	23.7	21.5	18.9	11.7
14795,14797	Subsoil	1.4	8.9	7.9	15.8	19.7	21.0	25.5

VERNON FINE SANDY LOAM.

The Vernon fine sandy loam consists of a brown to reddish-brown fine sandy loam, from 12 to 18 inches deep, underlain by a reddish-brown to red fine sandy clay, which at a depth of 5 feet or more grades into a partially disintegrated red sandstone. The darker brown color is characteristic of the heaviest phase of the type, which in general occupies gently sloping areas. The redder colors predominate in the more hilly areas, where the soil may vary from a medium fine sandy loam underlain at a depth of from 12 to 15 inches by a red fine sandy clay to almost a pure light-brown fine sand from 12 to 18 inches deep, underlain by the characteristic red clay. All of the variations in the redder phase may be found within very limited areas, as the wind as well as erosion has been a potent factor in modifying the soil. Generally the crests of ridges are covered by the heavier red phase, while on the hillsides the soil varies in sandiness, the sand covering being over 18 inches deep where this type adjoins areas of the Vernon fine sand. The organic content of the soil is rather low, except in the more loamy areas. It is easily tilled and does not bake on drying, but is drifted to some extent by the winds.

This is the most extensive type in the county. It is the principal upland type east of the Sante Fe Railroad and is found in considerable areas in the western part of the county. With the exception of a part of the area near Wheatland, all areas west and northwest of the city of Oklahoma are of the brown phase described above. Other areas of this phase are found east of Oklahoma, bordering the river, as far as Spencer, around Dickson, and south in a strip from 1 to 2 miles wide bordering the Vernon silt loam, and east of Choctaw and north of Harrah, bordering the river lands. Smaller areas of the brown phase are found on the crests of some of the ridges all through the eastern part of the county. The remaining areas are more variable in character and belong to the red phase.

The surface ranges from level or gently sloping in the brown phase to quite rolling in some of the larger areas of the red phase. The

whole sandstone formation giving rise to this type has been badly eroded by numerous creeks and streamlets. Deep Fork with its intricate system of tributaries drains a larger proportion of the type. The crests of the principal divides are from 100 to 180 feet higher than the creek lowlands. Some of the slopes are gradual and do not wash very badly, but many of them are too steep to be farmed, unless a system of terracing is employed as a means of checking erosion. All areas are naturally well drained.

This type originally was forested with a scrubby growth of post and black-jack oak. Nearly all of the brown phase and something over half of the red phase is under cultivation. Cotton and corn are the principal crops, except on the brown phase, where these are supplemented by a number of crops, including oats, wheat, Kafir corn, sorghum, and a few others of less importance. Cotton yields from one-third to three-fourths of a bale and corn from 10 to 25 bushels per acre. The other crops grown on the brown phase give somewhat better yields than on the Vernon sandy loam. A few cattle are kept on the greater number of farms. Peaches are being grown on a commercial scale by a few, and the industry is being extended gradually. The trees do exceptionally well if the orchards are properly located and well cared for. Grapes do well and are grown in a limited way for home use. Pears and apples also do well on the more loamy areas. The average results of mechanical analyses of typical samples of this soil are given in the following table:

Mechanical analyses of Vernon fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per ct.	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*
14798,14800	Soil	0.1	0.4	1.0	34.5	36.4	15.3	12.0
14799,14801	Subsoil	.1	.7	.9	24 5	29.0	16.9	28.0

VERNON SILT LOAM.

The soil of the Vernon silt loam consists of a dark-brownish silt loam containing a high percentage of very fine sand 10 to 15 inches deep, which grades into a dark-brown tough silty clay subsoil which is apparently calcareous. When this clay is exposed it cracks badly and bakes almost as hard as a brick, and even when moist it is very difficult to penetrate. At a depth of from 4 to 5 feet the dark clay gives way to a slightly more friable reddish-brown or red clay, which continues to a depth of about 30 feet, where sandstone is encountered, interstratified with layers of shale and shaly sandstone. As a rule the more level areas have a soil more than 10 to 14 inches deep and a subsoil considerably tougher and more impervious than is found on

most of the slopes. The soil in general contains a sufficient quantity of humus to make it friable and mellow when under cultivation, and the particles of sand lie along the dividing line between very fine sand and silt, and for this reason the soil in the field has more the characteristics of a silt loam than a fine sandy loam. It clods to some extent, but the clods are easily pulverized with the harrow.

This is next to the most extensive type in the area, and is confined very largely to the western half of the county. It occupies large level areas and gentle slopes. The steeper slopes, which were almost invariably badly eroded, were mapped as Vernon clay. The underdrainage of the type is poor, on account of the heavy impervious subsoil, but except in the very level areas nearly all the surplus waters drain off the surface. Crops on this type suffer during wet seasons and more than would be expected during dry seasons, because the roots can not penetrate the subsoil.

The Vernon silt loam is derived from the upper clays of the Enid formation, which includes all of the low plains region or prairie belt of eastern Oklahoma.

This type is looked upon as the most desirable of the upland soils for general farming, and a very large percentage of it is under cultivation. The remainder is in prairie grasses, which are cut for hay. Wheat, oats, and corn are the crops most extensively grown. Some attention is given to a variety of other crops, chief among which may be mentioned cotton, Kafir corn, sorghum, broom corn, castor beans, and alfalfa. Stock raising is an important industry with some of the farmers. The results with alfalfa have not been satisfactory in all cases, as the crop does not do very well on account of the heavy subsoil. Cotton makes a good growth, but matures late and does not fruit nearly so well as on the sandier types. Corn yields from 30 to 50 bushels, wheat from 15 to 30 bushels, oats from 30 to 60 bushels, Kafir corn from 30 to 50 bushels, cotton from one-half to 1 bale, and prairie grass from one-half to three-fourths ton of hay per acre.

This soil is especially adapted to the grains and to stock raising. Dairying could be made a profitable industry.

The average results of mechanical analyses of samples of this type are given in the following table:

Mechanical analyses of Vernon silt loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per ct.	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*
14807,14809	Soil	0.1	0.5	0.3	2.2	40.0	38.6	17.9
14808,14810	Subsoil	.1	.6	.4	1.9	34.6	29.3	33.2

VERNON CLAY.

The Vernon clay is confined to badly eroded areas in the prairie belt, where the greater part of the original Vernon silt loam has been removed, exposing the underlying red clays. The soil to a depth of from 4 to 6 inches varies from a reddish-brown heavy silt loam to a reddish-brown clay loam. The subsoil is a red heavy silty clay. In some of the areas there is very little difference between soil and subsoil. Some areas are cultivable, but others are too badly gullied to be used for anything but pasture lands.

This is not an extensive type and is found mostly to the north and northwest of the city of Oklahoma, where the creeks have cut channels from 50 to 100 feet below the level of the plain. All the areas are rolling and subject to further erosion. The greater part of the type is either lying idle or is fenced and pastured. Wheat, oats, and corn are the principal crops. The yields are not quite so good as on the Vernon silt loam. It would be possible to improve nearly all of the eroded areas by planting to Bermuda grass, which would afford good pasturage for eight or nine months in the year. When once started, it can be counted upon to check erosion. Planting to black locust trees would be another valuable means of improving this type.

On account of the variable character of this soil, even in very limited areas, no samples were taken for mechanical analyses.

ROUGH STONY LAND.

The term "Rough stony land" refers to steep and badly eroded slopes, where the sandstone outcrops to such an extent as to render them unfit for cultivation. The small streams flowing into Deep Fork have produced the greater number of these stony areas. The beds of these streams are from 50 to 100 feet below the level of the uplands. In some areas there is little else than sandstone, while in other areas there is a coating of soil deep enough to support a scrubby growth of black-jack oak and a few varieties of coarse grass. The soil varies from a sand underlain by sandstone to a fine sandy loam, which, if mapped separately, would be classed with the Vernon fine sandy loam.

No attempt has been made to use these stony lands except for what little fuel and pasturage they afford. All areas should be left forested, because when they are bare there is so much wash material spread out over the valuable lowland strips that these are buried and rendered practically worthless. The better areas could be improved by cleaning out the underbrush and sowing Bermuda grass. In this way some fair pasture lands could be made out of what is now worthless ground.

MILLER FINE SANDY LOAM.

The Miller fine sandy loam consists of a brown to reddish-brown fine sandy loam from 12 to 15 inches deep, underlain by a reddish-brown fine sandy loam ranging in texture from that of the soil to a grade heavier. In some of the smaller strips the soil is somewhat more sandy. From this extreme there are larger areas where the soil approaches the texture of a loam. There are other local sandy areas which have resulted from hill wash. This soil contains a fair quantity of humus, making it mellow and easy to keep in good tilth.

Although occurring in a great number of areas, the Miller fine sandy loam is not a very extensive type. It is found only in narrow strips along small streams having their headwaters in the sandstone formation so extensively developed in the eastern three-fifths of the county. The more typical areas are purely alluvial; but bordering these are narrow sloping strips that have been built up by local wash intermixed with material transferred some distance by the streams. All the areas are level or very nearly so and are well drained, except in a few narrow strips where the stream has been obstructed.

Practically the whole of this type is under cultivation, corn and cotton being the most important crops. A great many farmers, however, use this type exclusively for corn and grow their cotton on the uplands. Cotton yields from one-half to 1 bale and corn from 25 to 40 bushels per acre. Very little oats are grown, but this crop does well if confined to the heavier phases of the type. Alfalfa would do well in all areas except the slopes and small strips, where the surface is constantly being built up by wash during heavy rains.. Sorghum and Kafir corn give satisfactory yields. A great diversity of crops could be grown on this soil. Through some of the sandier sections of the county it is the only soil under cultivation.

The average results of mechanical analyses of representative samples of this type are given in the following table:

Mechanical analyses of Miller fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per ct.	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*
14788, 14790	Soil	0.0	0.1	0.6	33.3	38.6	17.5	9.9
14789, 14791	Subsoil	Tr.	.1	.3	25.1	46.0	16.5	11.7

MILLER LOAM.

The Miller loam is a brown to reddish-brown loam to silty loam from 10 to 12 inches deep, resting upon a reddish-brown subsoil which varies in texture from a fine plastic loam to a friable silty clay. Along Deer and Bluff creeks, where the highlands are principally Vernon silt

loam, the subsoil is uniformly a reddish silty clay loam or clay, but along Deep Fork and its tributaries it is more variable in texture and color. The quantity of humus in the soil is sufficient to make it friable and retentive of moisture. It is not hard to keep in good tilth if properly handled.

The largest areas of this type are found along Deer and Bluff creeks and along Deep Fork and some of its tributaries rising in the prairie belt. A few small areas occur south of the river along small streams in the prairie belt.

It is an alluvial soil of local origin and has been deposited in level strips uninterrupted by terrace lines. All the areas are fairly well drained, excepting a few depressions and some of the very level areas in Deep Fork Valley northeast of Luther, where the general water table is near the surface. These wet areas could easily be improved by tile or open drains.

This soil ranks with the Wabash silt loam in productiveness and certainty of good yields from year to year. Corn, oats, and wheat are the most important crops. Corn will yield from 40 to 60 bushels, wheat from 20 to 35 bushels, and oats from 40 to 60 bushels per acre. Alfalfa is not grown to any great extent, but it does well. Cotton is grown in a limited way and the yields are fairly good. It has a tendency, however, to go too much to stalk.

The average results of mechanical analyses of representative samples of this soil are given in the following table:

Mechanical analyses of Miller loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per ct.	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*
14784, 14786	Soil	0.0	0.2	0.2	11.6	30.5	38.1	19.1
14785, 14787	Subsoil	.1	.1	.2	13.3	34.3	33.4	18.4

MILLER CLAY.

The soil of the Miller clay is from 4 to 6 inches deep and consists of a brown to reddish-brown silty clay loam or clay which clods and bakes badly. It is difficult to plow, and if plowed too wet it assumes a hard, cloddy structure that is very difficult to break down. The subsoil to a depth of 3 feet or more is a reddish-brown, tough silty clay which is practically impervious to water.

This type is very limited in extent. The only areas encountered are in the lower valley of Deep Fork, where it occupies low, flat, and poorly drained areas. Parts of the areas in sections 11 and 14 of Luther Township contain enough soluble salts, or alkali, in the soil to render them unfit for cultivation. This condition could be remedied by providing good drainage.

Only a few small areas were seen under cultivation at the time of the survey. They were farmed in the same way and used for the same crops as the Miller loam, with which this type is associated. The uncultivated areas are forested with oak.

The results of mechanical analyses of samples of the soil and subsoil of this type are given below:

Mechanical analyses of Miller clay.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per ct.	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*
14792	Soil	0.0	0.5	0.3	1.3	3.5	47.4	47.4
14793	Subsoil	.1	.1	.0	.7	8.1	65.5	26.3

WABASH FINE SAND.

This type consists of a loose fine to very fine sand 3 feet or more in depth. The soil, which is from 6 to 8 inches deep, ranges from a light-gray color in newly wind-blown areas to a brownish gray in the leveler and slightly more loamy areas. The subsoil is a yellowish or light-brown color, and is less coherent than the soil. In places the soil is drifted so badly that it is very difficult to get a stand of any of the seeded crops.

This is an alluvial soil derived from the more recent sandy deposits of the North Canadian River. It occurs in an almost continuous strip immediately along the stream. Small areas occur on the second terrace, either as originally laid down by flood waters or as wind-blown strips bordering the first terrace. The lower lying areas are subject to occasional overflows. All the other areas are naturally well drained.

Some areas of this type are under cultivation. Where a farmer has little else than this type he will try to grow on it any of the crops commonly grown on the more loamy lowlands. If it occurs on the farms only in small areas, it is generally planted to corn. The yields obtained are quite variable. Some peaches and grapes are grown and do fairly well. This soil is particularly adapted to trucking and the higher lying areas near the city of Oklahoma could be used profitably for this purpose.

The larger areas of this type could be made very valuable by leveling and irrigating them. The silt and clay from the irrigation waters would soon make the soil loamy enough to keep it from being drifted by the winds.

The results of mechanical analyses of a representative sample of the soil and subsoil of this type are given in the following table:

Mechanical analyses of Wabash fine sand.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per ct.	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*
14817	Soil	0.1	0.1	0.1	13.2	75.6	4.6	5.9
14818	Subsoil	.0	.0	.0	28.9	59.6	7.0	4.6

WABASH FINE SANDY LOAM.

The Wabash fine sandy loam has a dark brownish or gray soil 15 to 20 inches deep, with the texture of a fine to very fine sandy loam. The soil contains enough humus to make it mellow, retentive of moisture, and easy to till. The subsoil to a depth of at least 3 feet consists of a light-brownish fine sand or a fine sandy loam having the same texture as the soil. The extremes in the texture of the subsoil are not sufficient greatly to influence the character of the crops grown.

This is an alluvial soil built up by the North Canadian River in times of overflow. It is found on all terraces, but more generally on the second one. The surface is level to gently undulating and all the areas are well drained.

Practically all of this type is under cultivation. Corn, wheat, and oats are the principal crops. Corn yields from 30 to 50 bushels, wheat from 15 to 25 bushels, and oats from 30 to 60 bushels per acre. Other grain crops adapted to the climate do equally as well. Only a few small patches of alfalfa were seen growing on this soil, but from their appearance it is evident that this is one of the best alfalfa soils in the county. Peaches and apples do well. A number of farmers on this type devote a part of their attention to stock raising.

The average results of mechanical analyses of typical samples of this soil are given in the following table:

Mechanical analyses of Wabash fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per ct.	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*
14813, 14815	Soil	0.1	0.1	0.1	4.1	65.8	21.0	9.2
14814, 14816	Subsoil	.0	.1	.1	8.5	75.2	8.8	7.6

WABASH SILT LOAM.

The soil of the Wabash silt loam to a depth of from 12 to 18 inches consists of a dark-brown medium to heavy silt loam, with a humus content sufficiently high to make it friable and retentive of moisture.

It clods considerably when plowed, but rarely badly enough to hinder the seeding or cultivation of crops. The subsoil to a depth of about 30 inches is a dark, brownish, heavy silt loam possessing claylike properties. Although heavy and tough, it is more easily penetrated by plant roots than the subsoil of the Vernon silt loam. Its color is much darker than that of the Miller loam. Below 30 inches there may be a gradation back into a fine sand or fine sandy loam. This is not necessarily the case, as some areas have the heavy subsoil extending to a depth of about 5 feet.

This type is derived from the alluvial deposits of the North Canadian River. It is found more generally on the upper terraces, but occasionally on the lower terraces.

The Wabash silt loam is the most highly prized type of the area for cereals and forage crops. Wheat, corn, and oats are the crops most extensively grown. Corn yields from 40 to 60 bushels, wheat from 20 to 35 bushels, and oats from 40 to 60 bushels per acre. Alfalfa is not yet an important crop, but bids fair to become so within the next few years. With some of the farmers stock raising is an important industry. Cotton is not grown to any extent. Apples do well.

The average results of mechanical analyses of typical samples of this soil are given in the following table:

Mechanical analyses of Wabash silt loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per ct.	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*
14821, 14823	Soil	0.0	0.1	0.1	1.1	21.2	58.3	19.8
14822, 14824	Subsoil	.0	.0	.1	1.7	23.7	56.4	18.5

The following sample contained more than one-half of 1 per cent of calcium carbonate ($CaCO_3$): No. 14824, 1.77.

WABASH SILT CLAY.

The Wabash silt clay is a black silty clay about 12 inches deep, underlain by a dark-brown tough silty clay which extends to a depth of 3 feet or more. The large quantity of humus carried by the soil makes it quite loamy, but on drying it cracks badly. When only moist, it is sticky and hard to till, for which reason it is locally referred to as "gumbo land." Its unyielding properties make it a much less desirable soil than the Wabash silt loam, although it produces about as good crops when a stand is secured.

This is the heaviest of the river-bottom soils. It is found on all the terraces, but more generally on the outer terraces bordering the slopes. The upper terraces are fairly well drained, except along the slopes, where they receive flood waters from the small upland streams. These could be drained by opening outlets to the river.

Less than half of this type is under cultivation. Some areas are still forested with a scattering growth of oak; others have been cultivated, but are now lying idle. Wheat and corn are the chief crops. Oats are grown in a more limited way. One field of alfalfa was seen growing on this soil during the survey. The crop was making a good growth, but the stand was poor, due in part, no doubt, to the heavy soil and in part to the heavy impervious subsoil. Corn and wheat give about the same yields as on the Wabash silt loam.

The average results of mechanical analyses of typical samples of this soil are given in the following table:

Mechanical analyses of Wabash silt clay.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per ct.	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*
14825, 14827	Soil	0.1	0.3	0.3	2.2	9.2	63.2	24.9
14826, 14828	Subsoil	.3	.7	.7	3.1	10.1	52.9	32.0

The following sample contained more than one-half of 1 per cent of calcium carbonate ($CaCo_3$): No. 14826, 0.56.

SUMMARY.

Oklahoma County is situated in the south-central part of Oklahoma and comprises 720 square miles, or 460,800 acres. This section, once a part of the Indian Territory, was opened to settlement in 1889. All the available agricultural land was taken up within a few hours after the opening. The growth of the county in population and wealth has been both rapid and substantial.

The county comprises portions of two of the principal agricultural belts of Oklahoma, each having quite distinct topographic features. The western two-fifths is in the prairie section. Here the surface ranges from level to gently rolling, broken only by stream depressions and valleys from 10 to 100 feet deep. The eastern three-fifths of the county lies within the sandy section, which is decidedly more rolling and hilly and is badly cut by an extensive system of small streams.

The city of Oklahoma, with a population of about 35,000, is the chief city of the area, and is quite a railroad center, through lines of the Atchison, Topeka and Santa Fe, the Chicago, Rock Island and Pacific, the St. Louis and San Francisco, and the Missouri, Kansas and Texas railroads passing through it. Situated on these lines are many towns which are shipping and supply points for the territory surrounding them. No section of the county is more than 9 miles from a railroad station.

The county is provided with an extensive system of public roads, there being a road on nearly every section line. Those through the

prairie are in good condition except during rainy weather, but some of those through the sandy section are too sandy and hilly to be used for heavy hauling.

The climate of the area is healthful and pleasant and is favorable to the growth of a great variety of crops. The summers are long and hot, but the humidity is relatively low, and there is nearly always a good breeze blowing. The spring months are accompanied by high winds and erratic cold snaps. The winters are dry and usually not very cold. The annual rainfall is about 31 inches, occurring mostly during the growing season. Prolonged droughts sometimes occur. The average growing season is about seven months.

The farmers through the prairie section devote most of their attention to wheat, corn, oats, Kafir corn, and hay from native prairie grasses. In the sandy belt the areas under cultivation are devoted largely to cotton, which is the chief money crop. On some of the sandy soils peach growing is becoming an important industry. In all lines of farming the tendency is more and more toward the use of improved machinery.

Only the broader soil adaptations are recognized, except for a few special crops. Little attention has been given to the systematic rotation of crops.

Labor is scarce and difficult to secure. Except during the grain-harvesting season nearly all of the work is done by the farmer and his family. For lack of labor much of the cotton crop remains ungathered until late in the winter.

According to the census of 1900, the average size of the farms in Oklahoma County was 169 acres. Of the total farms, 59 per cent were operated by the owners and the remainder by tenants. Farms are usually rented on shares. Where the tenant furnishes nothing but his labor he receives one-half of the crop. Where he furnishes seed, tools, work animals, etc., he receives two-thirds of the crop.

The prices of land are reasonable. The sandy lands can be bought for $20 an acre or less, and the prairie lands for from $10 to $80 an acre.

The greatest opportunities in the county are in the line of cattle and hog raising. Dairying is another important industry that could be developed more extensively.

There are two general groups of soils in the county, one comprising all of the uplands and the other the stream bottoms. The soils of the uplands are residual in origin. Some of them are derived from the Enid formation of the Permian and some from the Chandler formation of the Pennsylvanian. These formations are sometimes collectively spoken of as the Permian red beds. The soils of these two formations are closely associated and have been grouped in the Vernon series.

The alluvial bottom soils are subdivided into two series. Those types of local origin and of brown to red color have been classed with the Miller series, while the dark soils in the valley of the North Canadian River, which are made up of a mixture of materials brought into the area by this stream, have been classed with the Wabash series.

The Vernon sand is not farmed except in local areas, where the sand is shallowest and slightly loamy. The forested areas afford scant pasturage. Peaches and grapes do fairly well in the better areas. Cowpeas would prove a paying crop.

The Vernon fine sand has a low agricultural value, the crop yields being light and uncertain. Peaches and grapes do fairly well. Cowpeas would prove a valuable crop for forage and as a means of improving the soil. The timbered areas are fenced and pastured.

On the Vernon sandy loam cotton, corn, Kafir corn, sorghum, and broom corn give good yields. Oats give satisfactory yields in good seasons. This type is recognized as a good peach soil.

The Vernon fine sandy loam in its sandier phases is devoted principally to cotton, with corn as the next most important crop. It ranks with the Vernon sandy loam as a peach soil. On the brown phase of the type corn, oats, and wheat are the principal crops. Sorghum and Kafir corn do well. All of the rolling areas are subject to erosion and are in need of terracing.

The Vernon silt loam produces excellent crops of corn, wheat, oats, sorghum, and Kafir corn. Cotton usually does not yield in keeping with the size of the plant. The type as a whole is especially adapted to dairying and stock raising.

The Rough stony land is not cultivable. Some areas could be improved by cleaning out the underbrush and planting to Bermuda grass. All areas should remain timbered, so as to check erosion as much as possible.

The Miller fine sandy loam gives the best results with cotton, corn, sorghum, and Kafir corn. Some areas of this type are especially adapted to alfalfa. In some areas the soil needs artificial drainage.

The Miller loam gives heavy yields of corn, wheat, oats, cotton, sorghum, Kafir corn, and several other crops of less importance. It is good alfalfa soil.

The Miller clay is not farmed to any extent. If properly drained it could be made a good wheat land and would grow good Bermuda grass. At present it contains some alkali, but this would disappear if good drainage were provided.

Only limited areas of the Wabash fine sand are cultivated, and these are not especially well adapted to any of the crops grown. Peaches and grapes do fairly well on the upper level areas. Early trucking would be a profitable industry on some parts of this type.

The Wabash fine sandy loam produces good crops of corn, oats, wheat, Kafir corn, sorghum, and cotton. Alfalfa does well.

The Wabash silt loam produces large yields of corn, wheat, oats, and a number of other crops grown on a more limited scale. Alfalfa should become an extensive crop within the next few years. This type affords good opportunities for dairy farming and stock raising.

The Wabash silt clay, although a very productive soil when properly prepared and cultivated, is not considered so desirable as the Wabash silt loam or the Wabash fine sandy loam. Areas in cultivation are devoted largely to corn and wheat. Well-drained areas would produce a good sod of Bermuda grass.

NRCS Accessibility Statement

This document is not accessible by screen-reader software. The Natural Resources Conservation Service (NRCS) is committed to making its information accessible to all of its customers and employees. If you are experiencing accessibility issues and need assistance, please contact our Helpdesk by phone at 1-800-457-3642 or by e-mail at ServiceDesk-FTC@ftc.usda.gov. For assistance with publications that include maps, graphs, or similar forms of information, you may also wish to contact our State or local office. You can locate the correct office and phone number at http://offices.sc.egov.usda.gov/locator/app.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

U.S. DEPT. OF AGRICULTURE
BUREAU OF SOILS
MILTON WHITNEY, CHIEF

SOIL MAP

OKLAHOMA
OKLAHOMA COUNTY SHEET

SOIL PROFILE
(3 feet deep)

- Vernon sand — S / S
- Vernon fine sand — Fs / Fs / Sc
- Vernon sandy loam — Sl / Sc
- Vernon fine sandy loam — Fsl / Fsc
- Vernon silt loam — Sil / Sic
- Vernon clay — Hsil / Hsic
- Wabash fine sand — Fs / Fs
- Wabash fine sandy loam — Fsl / Fs
- Wabash silt loam — Hsil / Sic / Fsl
- Wabash silt clay — Sic / Sic
- Miller fine sandy loam — Fsl / Fsl
- Miller loam — L / L
- Miller clay — Sicl / Sic

LEGEND

- S Sand
- Fs Fine sand
- Sc Sandy clay
- Sl Sandy loam
- Fsl Fine sandy loam
- Fsc Fine sandy clay
- L Loam
- Sil Silt loam
- Sic Silty clay
- Hsil Heavy silt loam
- Hsic Heavy silty clay
- Sicl Silty clay loam

LEGEND

- V — Vernon sand
- Vs — Vernon fine sand
- Vl — Vernon sandy loam
- Vf — Vernon fine sandy loam
- Vsl — Vernon silt loam
- Vc — Vernon clay
- W — Wabash fine sand
- Wf — Wabash fine sandy loam
- Ws — Wabash silt loam
- Wc — Wabash silt clay
- M — Miller fine sandy loam
- Ml — Miller loam
- Mc — Miller clay
- R — Rough stony land

Soils surveyed by
W.E. McLendon and Grove B. Jones
1906

Scale 1 inch = 1 mile

Field Operations
Bureau of Soils
1906